The Uses, Impacts, and Future of Artificial Intelligence in the Hospitality Industry

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Abstract

Now artificial intelligence applications are widely used in various sectors; restaurants, entertainment, bank, hospital, and arm forced industries have adopted AI technology for a long time. The world has driven by digital calculation, as such, the transformation also enforced on the hospitality industry. This paper examines how artificial intelligence shapes the hospitality industry, including the current impact and future blueprint. It defines and explores the embedment of Artificial Intelligence in the current hospitality industry. In line with, the replacement of employee and the limitation of the machine is hard to ignore during the application. In the last part of the essay, we explore the amount of potential substituted labor capitals, predictions of consumer reaction, and general discussion of the investment costs of AI implementation. This work reach a conclusion that, hypothetically, achieving a trade-off balance between human resources and technological innovation could be the key to the implication of AI in the hospitality industry. This paper leave the operators of hotel business some hint about how to develop this industry, and also remind them the potential crisis the development might bring.

Keywords

Artificial Intelligence; Hospitality Industry; Robotics.

1. Introduction

As we progress into a new era, we have seen the rise of various new industries. The AI industry is one of them, as we strive for more efficient way of operating, the AI industry now developing at an unprecedented speed. As the AI industry develop at an unprecedented speed, it has an indispensable affects on the entire world. In the recent year a lot of researches has been based on the benefit of AI in technological and scientific innovation as well as pharmaceutical companies. Furthermore in the recent decade AI has been specially commonplace among the production lines internationally greatly increasing the efficiency; furthermore AI has been shown to shape a lot of industries, the most know once are probably pharmaceutical companies and production lines. One of the industries that is shaped by AI is the hospitality industry. A lot of hotels are now looking to utilize AI to increase their profitability and efficiency, therefore AI is a industry that its relatively new to the era has infinite area of development and may potentially replace human labor costs and increase efficiency, but it might also lead to high unemployment rate. In this report the impact of hospitality industry is going to be examined.

2.   Research Methodology

The primary research methods for this study are documents research and qualitative analysis. Documents will provide solid facts about how the AI work in various industry. The qualitative analysis will synthesis data to describe the overall pattern or tendency.

3.   Literature Review

A preliminary literature review showed that the past studies didn't classify different types of hotels. The application of AI into hotel industry will be significantly diverse from the type of the hotels are. The luxury hotel will be more likely to bring artificial intelligence into services to leave the costumer a more convenient experience, which will directly lead to the alternation of employees' statue. However, economic hotel brands will be not so interested into import the new technology into their service because their primary profits largely lean on maintaining low costs.

4.   Discussion

4.1.   What is AI?

AI stands for artificial intelligence, in a more common sense, technology utilized to mimic human or animal actions, this could greatly improve the efficiency of industries as it replaces lower level labors and increase the efficiency. Now days AI can be utilized in all industries to help companies and firms to maximize the profit and increase the efficiency. For instance, Amazon has opened super market called "amazon go" in the super market there is no actual workers, all the work is done by an extensive AI 360 degree camera system that monitors the purchases of costumers. This extensive camera system has allowed the store to effectively cut down on its operating costs by eliminating the laboring fees. Furthermore by implementing new technologies such as the camera system, the store could also effective attract more costumers to purchase their product. In addition, a Chinese restaurant named HaiDiLao also implemented AI in their business. The restaurant has implemented robots and stream lines to expedite the delivering of food and furthermore appeal to costumers that are curious in a new restaurant environment. These two example are jus the tip of the ice berg, there are a lot more to discover the AI field. In conclusion, AI stands for artificial intelligence, in simples terms it uses machines and computer based languages to perform tasks that could be done by humans. Furthermore, AI are now seen in various industries as it holds multiple benefits — such as increasing efficiency, appealing to costumers, eliminating labor costs— and it is likely that AI is going to be further implemented in the future by other industries.

4.2.   The Usage of AI in The Hotel Industry.

Artificial intelligence is able to help hotel manager by saving money from employees, eliminating human errors, and providing superior services. According to the *IMPACT OF ARTIFICIAL INTELLIGENCE & SERVICE AUTOMATION*[1], Chabot's, which can simulate nature language, is able to communicate with customers 24*7. Although there is not a very high rate of application in the industry, it certainly provides a bright future showing to the market of the potential of the method. The research mentions that "Artificial Intelligence is important in hospitality sector and 27.1% strongly agreed regarding the same."[1]. The model assumes that there are few difficulties blocking hotels from getting along with AI. However, the question, why do hotels implement AI, is certain that AI would improve hotel's profit. In many of the examples below, It is obvious to see the trending of such technology worldwide. Besides the economic benefits, many other advantages lie behind the industry: the possibility of increasing customers'

return rate, improving the hotel industry as a whole, even boost the speed of the creation of super AI.

4.3. The Current Impact of AI in the Hospitality Industry

Solving Miscommunication Problem. During the time of globalization, the number of international tourist arrivals has increased steadily every year. 1.5 billion international tourist arrivals were recorded in 2019 globally. Tourism spending consequently continued to grow while the global economy was slowing down.

Corresponding to the thriving tourism, the hospitality industry is now facing growing number of foreign guests in the service. However, tourists often encounter to miscommunication situations during their time in the hotel they booked. Although many European hotel workers are bilingual, most of them do not understand mandarin or other languages used in Asia. For the hotel industry, service tightly related to communication, which strongly influences by word. When the communication constraint by lower language level, important information could easily get lost, which would lower the guest's satisfaction. Research suggests there is a positive relation between the level of language proficiency and perceived service quality[2].

Introducing AI into service eliminated the language barrier to large extent. Hyatt Hotels Corporation announced one collaboration with Google to pilot the new Interpreter Mode feature for Google Assistant in January, 2019. The new tech enables the costumers to receive translations for 27 languages and conduct the conversation on Google Home Hub[3]. Earlier in 2017, Hyatt had been considering the use of smart speakers.

Advancement in Guest Experience. In the era of big data, hospitality industry adopted countless data processors. AI has taken over the duty from the very first step: booking business management. About three years ago, Avvio launched Allora, a platform help the accommodation providers to deliver a unique direct booking experience, and have more opportunity to communicate with the shopper. From 2017 to 2019, based on the profile of over 56 million guests and more than 600,000 data, Allora achieved almost 2,000 case to benefit the hotel for having a more attractive strategy. By collecting data, Allora identified that consumers in the different region have device preference during booking. Based on them Allora is able to give the hotel business a solution to optimize their resource then attract more hoteliers.

Chatbot, a software application used to conduct conversation via text, has found its way into hotel' room service. Marriott International has adopted CharBotlr, a device that handles guest requests through message since 2016. The device could offer functions such as changing reservations, answering questions, sending information to the potential guest who might need it.

4.4. The potential future of AI in hospitality industry

Cooperation between AI and human labor. AI as a relatively new technology, is like a double-edged sword, providing both challenges and opportunities at the same time. In the analysis of the current impact, this work found out that one of the big challenges of using AI is for the employees--- work replacement and unemployment. However, the usage of AI actually can create more jobs and give more opportunities for new jobs. Thus, the future of AI in a hotel is likely to be the cooperation of AI and human labor rather than substitution.

Generally speaking, the most obvious and direct job that AI created is about the development and research of AI technology. Also, the jobs related to data, analysis, and machine learning may also increase in demand. Research that published by World Economic Forum [4] shows that jobs in AI almost double by 2022. It seems that people are optimistic about the future of jobs related to AI and not worried about the problem of unemployment. When looking through occupational employment and wages from 2016-2019, specifically for the hotel, motel, and

resort desk clerks, it shows a small increase in employment[5]. Thus, if following the increasing trend, it should be a positive future of AI in a hotel instead of worries of unemployment.

The cooperation between human labor and AI have already used in some field like finance, so if hotel industry combines AI and human successfully, it could be valuable too, based on the experience from other fields. As said in this article[6], in finance, AI reduces workers in the audit process by automation. At the same time, AI provides opportunities for auditors who are able to work with machines, helping it improve the process quickly, and analyze data efficiently. Thus, a collaboration between human workers and machines actually is better for both creating forecast models and being a high-valued consultant auditor. Similar to finance, the usage of AI in hotel reduces workers and creates other works at the same time. In the checking-in/out position, a settlement of an AI machine could answer almost all the questions that the hotel thinks that consumers will ask. A chatbox is easier and useful so that the need for a reception is largely reduced. However, behind the usage of such an AI machine, there is a need for more workers to work with it. For example, the hotel industry needs employees to design a certain AI robot that is suitable and unique for their hotel, from the outlook to the inside software. Such a special AI machine should contain the information specifically for certain hotels and the city where the hotel settled and should be imputed the data of this certain hotel. Also, AI as a machine needs data to work better, so employees with data analyzing ability are needed. Consequently, monitoring the work situation of AI and in-time repairing need workers as well. For the perspective of working together, since the AI could do the repetitive task for human workers, it is helpful to decrease employees' emotional load [7], consequently making the work more efficient and create more value. For example, a reception employee may answer the simple but necessary question, like where is the elevator, many times one day and feel tired and impatient. However, if the AI is able to answer such questions easily, it helps to release the pressure of the reception employee and then give him more energy to do more complex tasks like checking in and assigning rooms.

Another idea about AI replacing human labor is that AI should replace tasks instead of jobs. There is a case study about Henn-na Hotel [7] illustrating this idea. Henn-na Hotel in Japan is the first hotel in Japan serving guests with robots. Although it has the ability to use AI technology and maintains a lot of robots, the hotel doesn't replace all jobs by AI, because human workers are still needed for complex tasks or unexpected events. It is known that Japanese people prefer a high-quality clean space for living. The company has improved its technology a lot, trying to make machine reach their requirement of cleaning, but they still think that the machine can't reach the level of human labor. Thus, high-quality cleaning tasks like deep clean of guests 'rooms are still done by human workers, while robots clean the lobby or hallways.

Consumer reactions. Whether consumers will prefer AI or human service and how will consumers react to AI development in hotel industry in the future is still undetermined. AI had already been used as a tool to analysis consumers' preferences in different businesses for many years. It was also used as a tool to improve consumers' experiences by giving them convenience. Siri, for example, has now been installed on a variety of Apple's product and widely used by it's consumers. It was given a beautiful female voice and can answer almost of the questions asked. Yet, AI may not be suitable for all the consumers. Humans are social animals, and interactions between person and person is needed. Psychologists believe that certain level of real world social activity is needed for an individual to stay in a healthy mentality [8]. In this case, some people may prefer real person services rather then communicating with robots. Furthermore, although nowadays a lot of people are familiar with AI, some are not, suggesting that those kinds of people may encounter difficulties communicating with AI and more complicated technology, if they exist in the future [9]. Under such kinds of conditions, human help is required to enable a smooth operation of AI's functions or solve any problems under complicated situations. Consequently, AI may not offer consumers the same level of service

which human labors can offer. In this case, it is more obvious that in the future, human labors are still needed in large amounts, and hotels cannot rely heavily on AI.

High cost of implementation of AI. The popularization and widespread of AI in the hospitality industry need more considerations because of the high cost of implementation of AI. As one of the biggest drawbacks of AI technology in general, the high cost of implementation should be carefully considered. In the past, Apple paid more than $200 million for Siri for software acquisition [10] and Amazon spent $26 million on developing Alexa [11]. Thus, learned from the past experience of Apple and Amazon, the hospitality industry may consider the cost of setting up machines and computers as well as hiring talented employees. Also, after setting up, there is still a continuing cost for AI: for the AI machine, the hotel has to maintain and repair all the time while using; for the software, since the technology is always developing and never cease, the hotel need to frequently update them. Thus, due to different scales and the ability to invest, the implementation of AI may not be acceptable for all hotels. Nowadays, many famous and big hotels have already used AI, but the future of small hotels like express hotels may need more considerations.

Forecasts. Speaking of all the benefits and issues AI is and will be bringing to humans and to the hotel industry all around the world, investors and business leaders should admit that human's current developments in AI are still immature and it was something completely new. Since the past cannot offer us a lot of experiences and information, the government, investor, and scientists need to be cautious on the path of studying and experimenting with Al. Yet, if wisely developed, AI will be an inevitable trend of hospitality industry and hotel business should embrace it, try to make changes, and have a better use of data to support AI technology. Based on the discussion of the current impact of AI in hospitality industry, though there are problems, its advantages overweigh its disadvantages. Since AI can lead hotel business to a better level of efficient service and consumer satisfaction, hotel business should learn and use AI more in the future and try to deal with the challenges.

5. Conclusion

The development of artificial intelligence in the hospitality industry is at least offering some help to luxury hotels, in terms of consumer services and data collection. Businesses are willing to embed AI because of their high efficiency. Since robots are already replicating some of the services humans can provide, some labors are replicated by AI. However, it is not likely that most or all of the labors working in the hotel industry will be replaced in the near future, since humans, as emotional beings, still prefer to interact with human labors, instead of machines. Yet, in the future, the development and researches in AI will still continue, whether it relates to the hospitality industry. After all, there are still a lot of things about artificial intelligence waiting to be explored.

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